Space Weather Forecast

Issued on Tuesday, 02 August 2022 at 12:23 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: No significant activity.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been very low over the past 24 hours. There are currently two sunspot regions on the visible disc. The main region of interest is in the south centre disc, and has shown minor growth in the last 24 hours, leading to some moderate complexity developing. The other region is a small unipolar spot that has rotated onto the southeast disc, however more detail may become apparent as it transits the solar disc into a clearer view. No Earth-directed CMEs (coronal mass ejections) were observed.

Solar Wind / Geomagnetic Activity: Earth has likely been grazing the faster solar winds from a coronal hole on the Sun. This has led to solar wind speeds being slightly elevated to elevated, fluctuating between 430 and 520 km/s. The strength of the magnetic field was generally weak to moderate, with the important north-south component fluctuating weakly between the two directions. Geomagnetic activity was Quiet to Unsettled.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Very Low solar activity is expected to continue, with a slight chance of M-class flares. Flare risks possibly increasing due to active regions rotating onto the visible disc later in the period.

Solar Wind / Geomagnetic Activity: No CMEs have been assessed as Earth-directed. Solar winds are slightly-elevated due to Earth experience the faster winds from a coronal hole. These winds are expected to persist until day 3 (4th) before easing to background. Geomagnetic activity should remain mainly Quiet with a chance of Unsettled or Active intervals through the period.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to remain at background with no solar radiation storms occurring.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	5	5	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	15	15	15	15
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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